Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Currently amended) A process for producing hydrazine with nitrogen and hydrogen as raw materials, ~~and~~ comprising the steps of:

(A) generating ~~a large quantity of~~ photons from a high-energy laser pulsed source, with pulse energy at least 10^5 J per pulse;

(B) passing said photons through a laser amplifier pumped by an arc lamp to produce photons with increased pulsed intensity, with pulse intensities ~~between~~ at least 10^{11} W/cm^2 ~~and 10^{12} W/cm^2~~;

(C) introducing said intensified pulsed laser photons to excite nitrogen molecules from said nitrogen raw materials through two-photon absorptions so that said nitrogen molecules are induced to make transitions from ~~the~~ a ground vibrational state thereof to excited vibrational states ~~in the ground electronic configuration~~;

(D) flowing said excited nitrogen molecules ~~after said laser pulse excitation~~ to a high-pressure vessel so as to cause effective collisional-mixing leading to a new vibrational energy state;

(E) flowing said nitrogen molecules at said new vibrational energy state from said high-pressure vessel to a container containing hydrogen from said hydrogen raw materials which reacts with said new vibrationally excited nitrogen molecules to form hydrazine; and

(F) cooling said hydrazine and leading to a liquid form of output.

3. (Currently amended) The process of claim 2 wherein said high-energy laser pulsed source has ~~the~~ photon wavelengths ~~are~~ from ~~the~~ longest visible red to near infrared wavelengths between 0.76 μm and 1 μm.

4. (Currently amended) The process of claim 3 wherein said high-energy laser pulsed source includes ~~said photons used are near-infrared laser photons produced from~~ a Nd: YAG laser.

5. (Currently amended) The process of claim 2 wherein said high-energy laser pulsed source has a ~~the photons come from a short-pulse laser source, with~~ pulse length ~~between~~ at least 0.1 nanoseconds ~~and 1 nanoseconds~~.

6. (Currently amended) The process of claim 2 wherein said arc lamp includes ~~the desired photon intensity between 10^{11} W/cm^2 and 10^{12} W/cm^2 comes from a laser amplifier pumped by flashlamps~~ a flashlamp.

7. (Original) The process of claim 6 wherein said flashlamp is a cesium-neon arc lamp.

8. (Canceled)

9. (Currently amended) The process of claim 2 wherein ~~the molecule ratio of~~ said hydrogen ~~to~~ and said nitrogen ~~is~~ have a molecular ratio of 2:1.

10. (Currently amended) The process of claim 2 wherein ~~the method of~~ cooling is conducted with a cyclic water flow system equipped with a heat exchanger.

11. (Currently amended) The process of claim 2 wherein said hydrazine is cooled to ~~ordinary~~ a temperature no higher than 300°K ~~and pressure, but not higher than 150°C~~.

12. (Currently amended) A process for producing hydrazine with nitrogen and water as raw materials, ~~and~~ comprising the steps of:
(A) generating ~~a quantity of~~ photons from a high-energy laser-pulsed source, with pulse energy at least 10^5 J per pulse;
(B) producing photons with increased pulse intensity after traversing a laser amplifier pumped by an arc lamp, with pulse intensities ~~between~~ at least 10^{11} W/cm^2 ~~and 10^{12} W/cm^2~~;
(C) introducing said intensified pulsed laser photons to excite nitrogen molecules from said nitrogen raw materials through a two-photon absorption process so that said nitrogen molecules are induced to make transitions from ~~the~~ a ground vibrational state thereof to excited vibrational states ~~in the ground electronic configuration~~;
(D) flowing said nitrogen, after said laser pulse excitation to produce excited nitrogen, into a vessel containing water so as to have good mixing between said excited nitrogen and said water; and
(E) providing an outlet so that ~~the~~ gas molecules consisting of ~~the ground states of~~ O_2 and N_2 can bubble out.

13. (Currently amended) The process of claim 12 wherein ~~the photons used are~~ said high-energy laser-pulsed source includes a XeCl excimer laser ~~photons of wavelength 0.35 μm~~.

14. (Currently amended) The process of claim 12 wherein the photons used are in ~~the~~ shortest visible blue with wavelength of 0.4 μm.

15. (Original) The process of claim 12 wherein the photons used have wavelengths between 0.35 μm and 0.4 μm.

16. (Currently amended) The process of claim 12 wherein the photons ~~come from a short pulse laser source, having~~ have a pulse length ~~between~~ at least 0.1 nanoseconds ~~and 1 nanosecond~~.

17. (Currently amended) The process of claim 12 wherein said ~~increased photon intensity between 10^{11} W/cm^2 and 10^{12} W/cm^2 comes from a laser amplifier pumped by~~ arc lamp includes ~~flashlamps~~ a flashlamp.

18. (Original) The process of claim 17 wherein said flashlamp is a lithium-argon arc lamp.

19. (Canceled)

20. (Currently amended) The process of claim 12 wherein ~~the molecular ratio of~~ said water molecules ~~to~~ and said nitrogen molecules ~~is~~ have a molecular ratio of at least 2:1.

21. (Original) The process of claim 12 wherein said outlet comprises a cyclic water-flow system equipped with a heat exchanger utilizing water operating at room temperature.